



Thank you for purchasing a quality product from Rolfes@Boone.

We realize that you have a choice of vendors when purchasing a temperature monitoring for your grain storage and processing facilities.

This manual contains the information necessary to ensure a safe and successful Installation and use of Rolfes' portable KF300 temperature monitoring system.



KF300 OPERATORS MANUAL

SPECIAL NOTE

READ THIS ENTIRE BOOKLET
BEFORE PROCEEDING WITH
THE INSTALLATION

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1. INTRODUCTION

This document describes how to correctly operate the KF300 portable unit in grain elevators and processing facilities.

2. TEMPERATURE DETECTION

Temperature Detection Equipment is critical for proper grain storage management. Without temperature detection equipment, the micro-organisms associated with the growth of various molds, insect activity, and/or the growth of the individual seed due to the presence of moisture can cause hot spots within the grain that can destroy all the stored grain.

With the portable KF300, these grain temperatures can be systematically monitored, and the user can use this information to proactively manage hotspots to avoid spoilage.

WARNING: DO NOT TAKE READINGS WHEN THE BIN IS BEING LOADED WITH PRODUCT. WAIT AT LEAST A DAY TO READ THE CABLES AND/OR TAKE OTHER STEPS TO DISSIPATE THE STATIC ELECTRICITY IN THE CABLES. THE KF300 MAYBE DAMAGED IF READINGS ARE TAKEN WHEN THE BIN IS BEING LOADED AND/OR WHEN THERE IS STATIC ELECTRICITY IN THE CABLES.

3. SYSTEM OVERVIEW

The KF300 portable temperature system is designed to manually read specific thermocouple (TC) temperature sensors that are in the cables suspended from the ceilings in grain storage facilities (See figure 1). These cables are connected to the CRB box. By simply plugging the KF300 into the cable plug in the CRB box, the user has almost instantaneous knowledge about any temperature trends in the bin and can take the necessary steps to resolve the issues and save the stored grain.

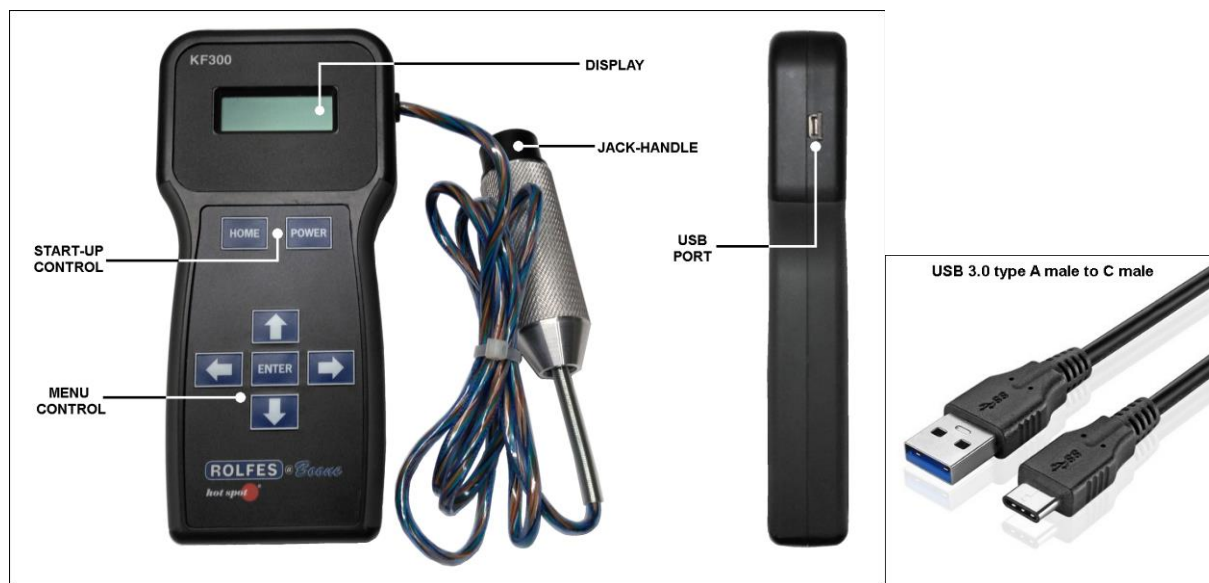


Figure 1. KF300 Portable Temperature Reader.

Figure 1a. USB cable.

The KF300 Jack-handle attached to the unit comes as a 6 TC, 12 TC, 18 TC, or 21 TC reader. (See figure 2)

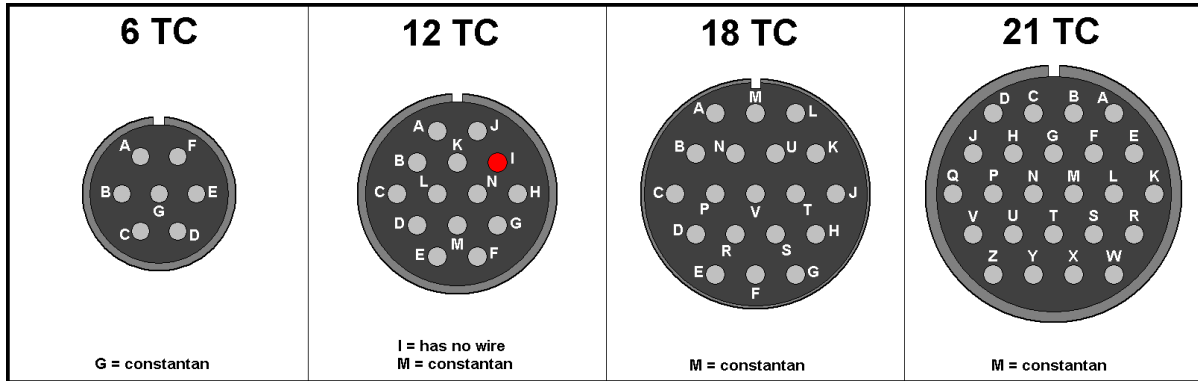


Figure 2. Jack-handle variations.

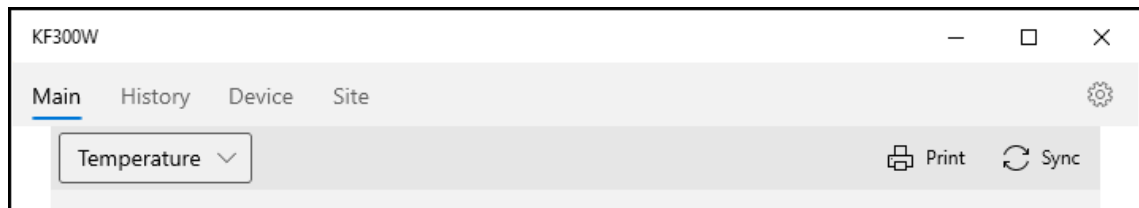
Once the KF300 reads the temperature data, this information can be transferred to the KF300 computer software using a USB cable or a Bluetooth (wireless) device.

The USB port and/or a standard 12V charger are used to charge the KF300 **4 NIMH 1.2V DC** batteries. Use a USB 3.0 type A male to C male cable. (See figure 1a).

4. FIRST TIME USE

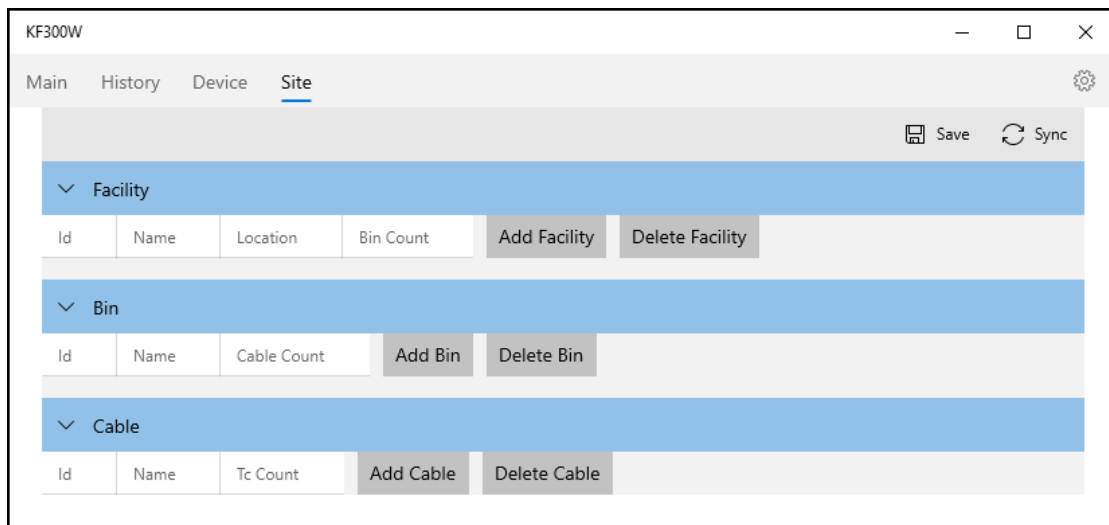
4.1 Installing KF300 software.

- 4.1.1 Insert the USB drive into the computer and browse the USB.
- 4.1.2 Run the file: **KF300W_(version#).appxbundle**.
- 4.1.3 Select **INSTALL** in the bottom right corner.
- 4.1.4 Launch the program and a screen will appear:



4.2 Creating the site file.

4.2.1. Select **Site** from the top toolbar.



4.2.2. Under the **Facility**, select **Add Facility**.

Facility					
Id	Name	Location	Bin Count	Add Facility	Delete Facility
1	Facility 1	Location 1	0		

4.2.3. Double click **Facility 1** to change the name of the facility.

4.2.4. Double click **Location 1** to change the name of the location.

4.2.5. If there is more than 1 facility, select **Add Facility** again. The maximum number of facilities is 15.

4.2.6. Once the facility(s) is(are) selected, select **Add Bin** under the **Bin** option.

Bin				
Id	Name	Cable Count	Add Bin	Delete Bin
1001	Bin 1	0		

4.2.7. Double click **Bin 1** to change the Bin name.

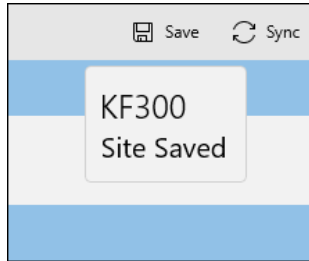
4.2.8. Keep adding all the Bins in your facility and change their names accordingly.

4.2.9. Once all the Bins are listed, select the first Bin from the list and then select **Add Cable** from the **Cable** option.

Cable				
Id	Name	Tc Count	Add Cable	Delete Cable
10010001	1	0		

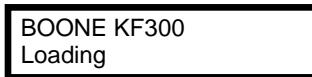
4.2.10. Double click **1** under **Name** to change the cable name.

- 4.2.11. Double click **0** under **Tc Count** to change the number of thermocouples (TC's).
- 4.2.12. Keep adding cables and change the TC count accordingly.
- 4.2.13. Repeat this process for each Bin in the facility.
- 4.2.14. To delete a facility, Bin, or cable, select it and click the corresponding **Delete** button.
- 4.2.15. Once the site file is done, select **Save** in the top right corner.

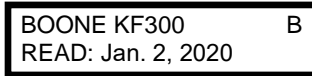


4.3 Transferring the Site file to the KF300.

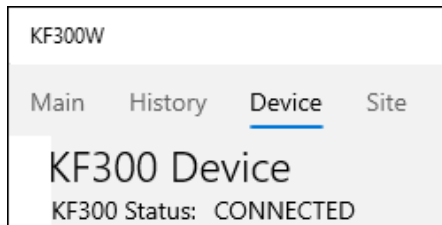
- 4.3.1. Turn on the KF300 by pressing the **<POWER>** button. The opening screen will appear:



- 4.3.2. After a few seconds the word, **READ** will appear with the date and time listed below the **BOONE KF300**.
- 4.3.3. Verify the Bluetooth device/connection on the computer. If there is no internal Bluetooth device, use the external Bluetooth adapter. If the KF300 is connected through Bluetooth, a B will appear in the upper right corner on the Main screen.



- 4.3.4. Open the KF300 program and check the Bluetooth connection by selecting **Device** at the top. It will either say: **CONNECTED** or **NO ADAPTER FOUND**.



- 4.3.5. If no Bluetooth Adapter was found, check the internal adapter under Settings -> Devices in Windows or check the external adapter.
- 4.3.6. Once connected, select **Site** at the top, then select **Sync** in the top right corner.
- 4.3.7. Configuration should now be installed on the KF300 and it's ready to take temperatures from your cables.

4.4 Downloading Temperatures and/or Resistances.

- 4.4.1. Open the KF300 program and check the Bluetooth connection by selecting **Device** at the top.
- 4.4.2. Once connected, select **Main** from the top, then select **Sync** in the top right corner.
- 4.4.3. A window will appear in the upper right corner with the download count.
- 4.4.4. Temperatures or Resistances will now show up on the Main screen.

5. THE KF300 PORTABLE

This section describes how to use the KF300 Portable Instrument and the function of the buttons.

5.1. KF300 Buttons.



Press this button ~~at any time to~~ return to the main screen.



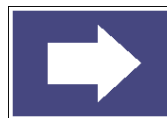
This button will turn the Unit on and off.



Use the Enter button to select an item from the Menu.



Use the Up and Down Arrow button to toggle through the Menu items.



Use the Right and Left Arrow button to skip through main screen options. Also use these buttons to change values under the Menu items.

5.2. KF300 Main Menus.

MAIN SCREEN: Pressing **HOME** returns the user to the Main screen. The Main screen displays the last date data was saved. First shown when powered on. See 5.3.1. on page 9.

BOONE KF300
READ: Jan. 2, 2020

Using the **UP-ARROW** button and starting at the Main Screen, the following menu will appear:

AUTO SCAN CABLE TEMPERATURES: The AUTO scan allows the user to automatically scan and save temperatures/resistance data. The KF300 can internally save 10 histories of temperature data. See 5.3.2. on page 9.

AUTO SCAN CABLE
TEMPERATURES

VIEW CABLE TEMPERATURES: The View cable allows the user to view the last stored temperature/resistance data by Facility, Bin, Cable, and Thermocouple. See 5.3.3. on page 10.

VIEW CABLE
TEMPERATURES

CHOOSE MODE TEMPERATURE: The Choose mode allows the user to select whether temperature or resistance is scanned/analyzed. Resistance mode allows the user to check the integrity of thermocouple signal. When switched to resistance the word Temperature will be replaced by Resistance in the menu items. See 5.3.4. on page 10.

CHOOSE MODE
TEMPERATURE

BACKLIGHT: The Backlight button allows the user to change the value of the backlight screen to a lighter or darker setting. See 5.3.5. on page 10.

BACKLIGHT: 0

MANUAL SCAN CABLE TEMPERATURES: The Manual scan button allows the user to scan and display the thermocouple cable temperature/resistance without saving the data. See 5.3.6. on page 11.

MANUAL SCAN CABL
TEMPERATURES

5.3. KF300 Submenus.

5.3.1. Main Screen: When the user is on the Main screen, use the **LEFT-ARROW** or **RIGHT-ARROW** button to display the following submenus:

04/08/2020	16:09
76 F	

Displays current date and time on the first row and the ambient temperature on the second row. When batteries are replaced, the date and time will go to default, until the KF300 program starts, and the unit connects with the Bluetooth.

BATTERY:	2404
USB: 0	CHRG: 0

Displays battery life on the first row in mV. On the second row it displays the state of the USB cable and charging condition. "0" state means nothing is plugged in or turned on. "1" state means the cable is plugged in and the unit is charging.

KF3200203-10
HW: A4 SW: 0.0020

Displays the serial number on the first row. On the second row it displays the Hardware version and the Software version.

5.3.2. Auto Scan Cable Temperatures: The Auto Scan button allows the user to read the cable temperature or resistance. Use the **ENTER** button to select the Facility, Bin, and Cable. Use the **UP** and **DOWN-ARROW** buttons to navigate through each item.

Note: If user wants to read the resistance from the Main Screen, use the **UP-ARROW** button to go to **CHOOSE MODE TEMPERATURE**. Use the **RIGHT** or **LEFT-ARROW** button to change to **RESISTANCE**. Then return to **AUTO SCAN**.

FACILITY NAME
FACILITY LOCATION

After pressing the **ENTER** button, the Facility name and location will display. If there is more than 1 facility, press the **UP-ARROW** button to select it. Press **ENTER** to select the Facility.

BIN NAME

The KF300 will then display the first Bin. If there is more than 1 Bin, press the **UP-ARROW** button to select it. Press **ENTER** to select the Bin you want to read.

BIN NAME
CABLE NUMBER

Next it will display the first Bin and the first cable. If there is more than 1 cable, press the **UP-ARROW** button to select it. Press **ENTER** to select the cable you want to read.

BIN NAME
CABLE# TC 1 # F

As soon as you select **ENTER**, it will scan through the thermocouples, displaying the temperature of each TC. An "OT" means Open Thermocouple. A "—" symbol means the KF300 has not read any cables.

ENTER=SAVE
Other key=CANCEL

After the first read cable reading, the KF300 will ask the user to either save it by selecting the **ENTER** button or cancel.

BIN NAME
CABLE NUMBER

If the User selects to save the data by using the ENTER button, the KF300 will display the bin name with the second cable or proceed to the next bin if a second cable is not present. Press **ENTER** to select the next cable you want to read.

Continue to read each cable in every bin until complete. The cable readings will automatically be stored in the KF300. To download these readings, start the KF300 program and Sync.

5.3.3.View Cable Temperatures: The View Cable button allows the user to see the last read stored on the KF300.

FACILITY NAME

Press **ENTER** to see the facility name. If there is more than 1 facility, press the **UP-ARROW** button to select it. Press **ENTER** to select the Facility.

BIN NAME

The KF300 will then display the first in. If there is more than 1 bin, press the **UP-ARROW** button to select it. Press **ENTER** to select the desired bin.

BIN NAME
CABLE NUMBER

The next display will be the first Bin and the first cable. If there is more than 1 cable, press the **UP-ARROW** button to select it. Press **ENTER** to select the desired cable.

BIN NAME
CABLE# TC 1 # F

Use the **UP** and **DOWN-ARROW** to toggle through each thermocouple displaying the temperature. An “**OT**” means Open Thermocouple. The “**—**” symbol means the thermocouple has not read any data.

Use the **LEFT ARROW** button to return to the previous item in this menu and select other Facilities, Bins or Cables to view.

5.3.4. Choose Mode Temperature: The Choose Mode button allows the user to toggle the read mode between temperature and resistance.

CHOOSE MODE
TEMPERATURE

By default, the mode is set to temperature. Press the **RIGHT** or **LEFT-ARROW** button to change to resistance.

CHOOSE MODE
RESISTANCE

After changing the mode to resistance. Use the **UP** or **DOWN-ARROW** button to select the next menu item.

5.3.5.Backlight: The Backlight button allows the user to change the background light on the display.

BACKLIGHT: 0

By default, the mode is set to “0”. Press the **RIGHT** or **LEFT-ARROW** button to change the value with increments of 10. Then use the **UP** or **DOWN-ARROW** button to select the next menu item.

5.3.6.Manual Scan Cable Temperatures: The Manual Scan button allows a user to manually read up to 21 thermocouples in the Bin. There is no selection by Facility, Bin, or Cable.

By way of example only, if a bin only has 6 TC’s, the 7th thermocouple will read “OT” . .

MANUAL SCAN CABL
TEMPERATURES

Press the **ENTER** button to select the first desired thermocouple.

MANUAL SCAN TEMP
TC 1 = ## F

Press the **UP** and **DOWN-ARROW** buttons to toggle between each thermocouple. Press the **HOME** button when finished.

MANUAL SCAN CABL
RESISTANCES

If the mode was set to resistance, the KF300 will display the number in Ohms. Press the **ENTER** button to select the desired thermocouple.

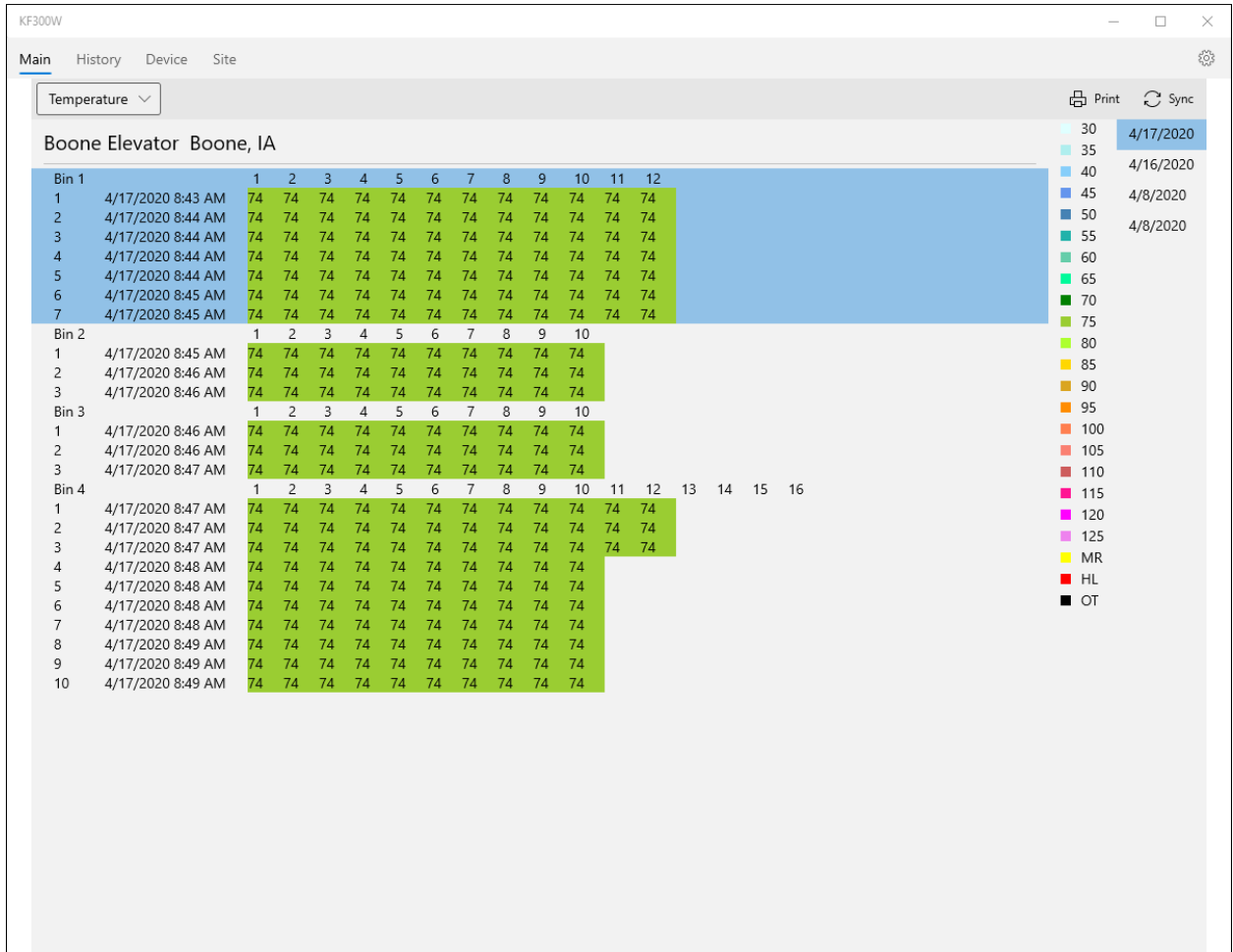
MANUAL SCAN RES
TC 1 = ###

Press the **UP** and **DOWN-ARROW** buttons to toggle between each thermocouple. Press the **HOME** button when finished.

6. KF300 SOFTWARE

This next section details how to use the KF300 software.

6.1 Main screen.



The Main screen has the following functions:

- Mode selection
- Print
- Sync
- Readings
- Color legend
- Date

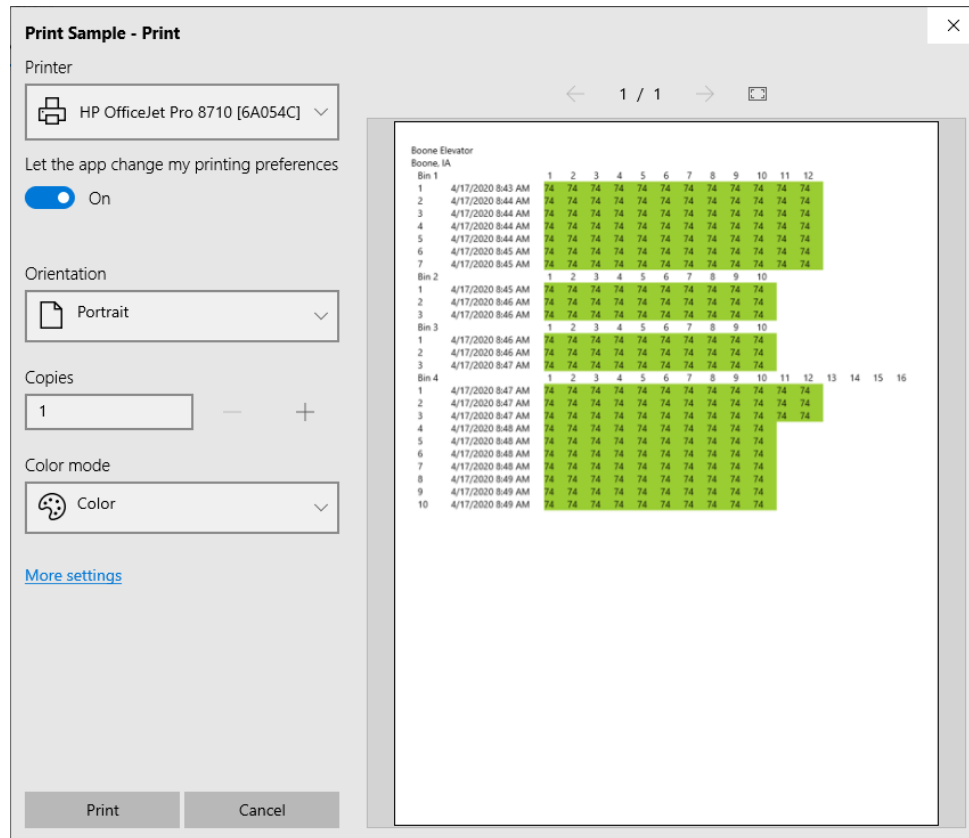
6.1.1. Mode selection

The Mode selection allows the user to choose Temperature or Resistance.



6.1.2. Print

The Print button allows the user to select a printer and print any readings or create a PDF.



6.1.3. Sync

The Sync button allows the user to download the stored cable readings as long as the user is connected to the Bluetooth device, or the USB cable is connected (See Device Options).

6.1.4. Readings

All the readings downloaded from the KF300 are shown on the main screen. Each reading will show the facility name, date, and time. TC1 will be the thermocouple closest to the bin floor.

6.1.5. Color Legend

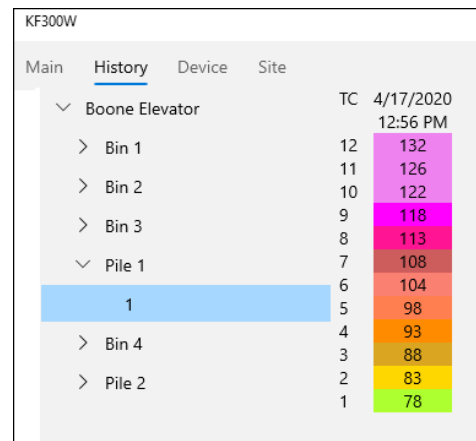
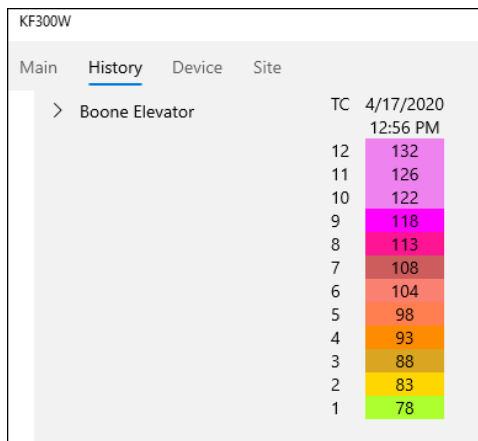
The Color Legend is a vertical row of colors with corresponding temperatures on the right side of the screen. **MR** stands for Maximum Rise alarm. **OT** represents an Open Thermocouple. **HL** stands for the High Limit alarm.

6.1.6. Date

Displays a list of the readings downloaded to the program with the most current read at the top.

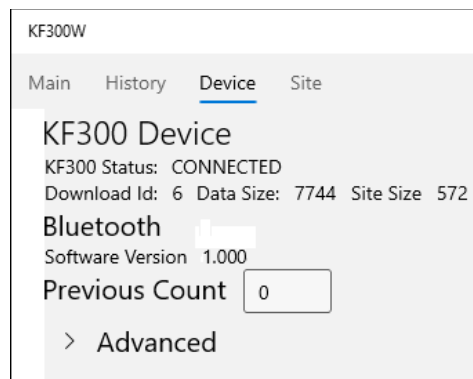
6.2 History screen.

The History screen displays all of the reading history of one particular cable. Select the facility to show all of the bins. Then select a cable from a bin to display its history.



6.3 Device screen.

The Device screen displays if the KF300 is connected via a Bluetooth device or the USB cable.



6.3.1. KF300 Status.

The KF300 Status button indicates if any of the following apply:

- **NO ADAPTER FOUND:** This indicator shows that the external Bluetooth device is not connected to the computer, or the USB cable is not plugged in. If there is an internal Bluetooth adapter, in Windows, right click on Start, select Settings, and go to Devices. Check the status of the “Bluetooth & Other Devices”.
- **DISCONNECTED:** This indicator shows that the external Bluetooth device or USB cable has been disconnected from the KF300 portable unit.
- **WATCH:** This indicator shows that the external/internal Bluetooth device is waiting for a response from the KF300 portable.
- **CONNECTED:** This indicator shows that the external/internal Bluetooth device or USB cable is connected to the KF300 and ready for download.

6.3.2. Download ID, Data Size, Site Size.

- 6.3.2.1. Download ID shows how many have been downloaded from the KF300 to the program.
- 6.3.2.2. Data Size shows the total number in bytes of the downloaded temperature readings.
- 6.3.2.3. Site Size shows the total number in bytes of the site file.

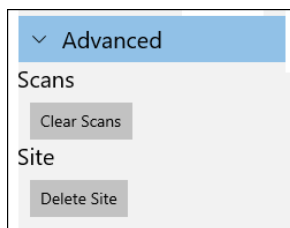
6.3.3. Bluetooth.

This button shows the Software version of the Bluetooth device inside the KF300 portable.

6.3.4. Previous Count.

The Previous Count button allows the user to choose the number of previous readings requested to be downloaded. If set to "0", it will only download the current read. By default, this option is set to "0". Note: If previous scans have been deleted, the user may retrieve this data by setting the Previous Count selection at the desired reading number greater than "0".

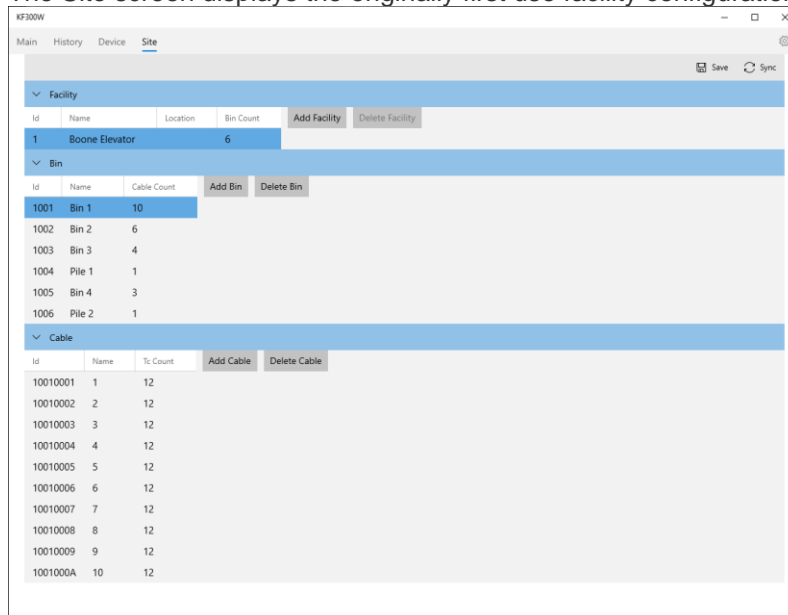
6.3.5. Advanced.



The Advanced section provides information on ways to clear the scans and/or delete the site on the KF300 portable. Warning! This will erase all the data on the KF300.

6.4 Site screen.

The Site screen displays the originally first use facility configuration. (See item 4).



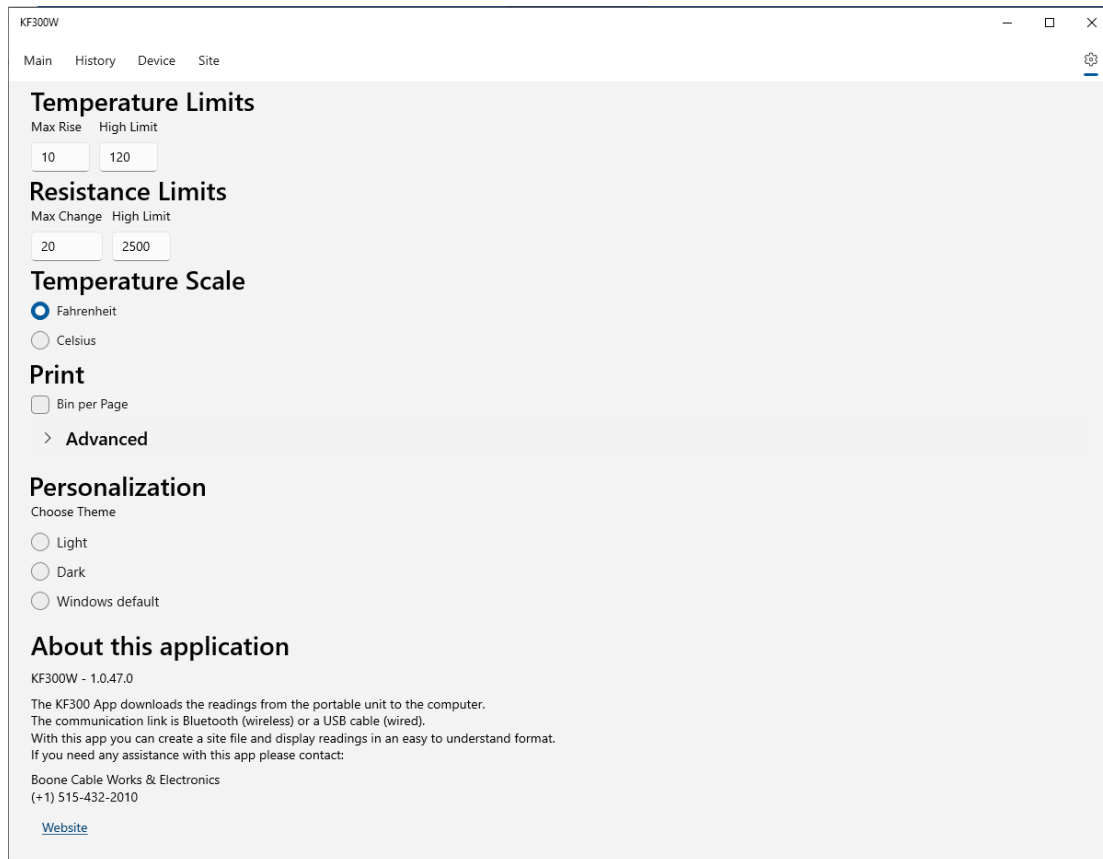
The KF300 can manage up to 15 facilities depending on the number of Bins at each facility. Each facility can be individually managed and deleted if desired. To delete the entire site from the program, select **Settings** (the gear icon), go to **Advanced**, and **Delete Site**.

Add as many Bins and cables as the facility utilizes and specify the number of thermocouples on each cable.

Once the Site has been created or modified, select **Save** from the upper right corner and then **Sync** it to your KF300 portable unit.

6.5 Settings.

The Settings screen shows the parameters of the program that can be changed. It also has information about the App and how to contact Rolfes@Boone for any assistance with the program and/or KF300 portable unit, plus a link to our website.



6.5.1. Temperature Limits.

6.5.1.1. **Max Rise** is the difference in °F or °C between the current read and the previous read. The default is set to 10 °F or 5 °C.

6.5.1.2. **High Limit** is the maximum temperature set before it starts alarming on HL. The default is set to 120 °F or 60 °C.

6.5.2. Resistance Limits.

6.5.1.1. **Max Change** is the difference in Ohms between the current read and the previous read. The default is set to 20 Ohms.

6.5.1.2. **High Limit** is this is the maximum resistance set before it starts alarming on HL. The default is set to 2500 Ohms.

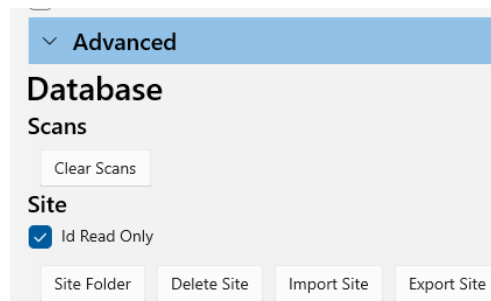
6.5.3. Temperature Scale.

Choose Fahrenheit or Celsius on how to display the temperatures on the screen. This option will not change the temperature format on the KF300 unit, only on the software.

6.5.4. Print.

This option allows the user to print the readings of each Bin on separate pages instead of continuously.

6.5.5. Advanced.



The Advanced section shows Database options. The **Clear Scans** option will erase all the readings from the program. Under the Site option, you can **Delete** the Site, **import** a Site file from a different KF300 stored on the computer, or **Export** a Site file from the current program to the computer. When you delete a Site, make sure you also clear the Scans. Only change the Advanced Options with help from Rolfes Technical Support.

6.5.6. Personalization.

This option allows the user to change to select either **Light**, **Dark** or **Windows default**.

6.5.7. About this application.

For additional information, go to <https://www.rolfesatboone.com>.

7. TROUBLESHOOTING

If the KF300 portable unit has OT readings, do the following test:

- Determine the number of holes on the end of the Jack-handle (See figure 2 on page 4).
- Take a paperclip (or wire) and unwind it.
- Stick one end into the hole marked as constantan (6 TC=G, 12, 18, 21TC=M).
- Stick the other end into the hole marked "A".
- Turn unit on and go to "MANUAL SCAN CABLE TEMPERATURES".
- Make sure it's on TC 1 and see if there is an ambient reading.
- Test TC 2, between "constantan" and "B".
- TC 3 = C, TC4 = D, etc.
- If you get an ambient read on every TC, check the CRB box or cable.
- If you don't get an ambient read, send the unit in to Rolfes@Boone for repairs.
- In that case, go to our website (www.rolfesatboone.com) and at the top, click on Repair Services.
- Scroll down and click on "Download Repair Form".
- Print and fill out the form and send it with unit to the address on the document.